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ABSTRACT

Designed to assist staff at Napa Valley College (NVC) in their efforts to develop short- and long-range plans for the institution, this report reviews recent reports by the Bureau of Labor Statistics regarding trends in the labor force. Following introductory material, the report looks at occupations with the largest job growth, the 20 fastest growing and fastest declining occupations from 1984 to 1995, and projected changes in employment for college-educated workers by occupation. Major trends in the labor force that may affect NVC are reviewed, including: (1) an increase in the importance of college degrees in the labor force; (2) increased participation of women in the labor force; (3) a decline in labor market participation among persons aged 55 or over; (4) increases in employment of electronics and engineering technical personnel; (5) increases in employment in health-related occupations; and (6) changes in employment prospects for office clerical workers, hotel and restaurant industry workers, protective service occupations, computer occupations, machine tool and welding occupations, education-related occupations, and scientific occupations. Finally, the report assesses the growing use of technology in the workplace. Each trend is discussed in terms of its implications for program and curriculum planning at NVC. (AYC)

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EMPLOYMENT TRENDS FROM 1984 TO 1995 AND THEIR IMPLICATIONS FOR NAPA VALLEY COLLEGE

Napa Valley College

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April, 1986

JC 860 210

PLANNING REPORT NUMBER 1

EMPLOYMENT TRENDS FROM 1984 TO 1995

AND THEIR IMPLICATIONS FOR NAPA VALLEY COLLEGE

Recent reports released by the federal government's Bureau of Labor Statistics (Silvestri and Lukasiewitz, 1985; Su, 1985) provide data on the number of people employed in each of 500 occupations in 1984 and on the number of individuals expected to be working in these occupations in 1995. Major findings of the Bureau of Labor Statistics studies and their implications for Napa Valley College are summarized in this report. Questions regarding trends in the labor force that are addressed in this report include the following:

- Which occuations are expected to add the most new jobs from 1984 to 1995?
- What are the 20 fastest-growing occuations with respect to jobs created?
- Which 20 occupations are expected to register the most rapid decline in employment from 1984 to 1995?
- What are the projected changes in employment opportunities for college-educated workers?
- Is the college degree increasing, remaining the same, or decreasing in importance in the labor market?
- What are the major trends in the composition of the labor force that may affect the programs and services offered at Napa Valley College?
- What are the employment prospects from now to 1995 for individuals interested in pursuing careers in major occupational areas, including college and university professors?

USES OF THIS REPORT

This report is one in a series that will be prepared to help guide college staff in their efforts to develop short-term and long-range plans for the institution. In addition to its use in educational planning, the information regarding career opportunities and the value of a college degree should be used by staff in promoting the college and specific courses for current and prospective students alike.

Students and members of the public need to be reminded continuously of the value of a college education and of the particular course(s) in which they are enrolled. This is because prospective students and current students are constantly weighing the costs against the benefits of attending college versus doing something else with their time. Costs of attending college include tuition, transportation, time, forfeited income, and effort. Benefits of college include job entry skills, transferable job skills, self-satisfaction, increased earning power, upward mobility, status, life style, and increased knowledge and appreciation of the world in which they live. Students tend to withdraw from classes and/or the college when the costs are high, when they do not sense that the benefits are being delivered or that they are very important, and when education becomes less of a major priority in their lives (Noel, 1985). Thus, it is important to identify and economic and non-economic benefits of our programs and courses and remind students and prospecitve students of these benefits. Providing students with this information may help tip the cost-benefit scale toward the decision to remain in their courses.

OCCUPATIONS ADDING LARGEST NUMBER OF JOBS

According to recent U. S. Bureau of Labor Statistics projections (Bureau of Labor Statistics, 1985), 37 of the 500 occupations for which projections were developed account for about one-half of the projected total job growth between 1984 and 1995 (See Table 1 on page 3.)

Napa Valley College currently offers programs or courses directly related to 13 of the 37 major occupational groups. About one-fourth of the occupations in this group generally require a college degree, roughly the same proportion found among all jobs in the economy. In general, these occupations are numerically large (only two had less than 300,000 workers in 1984). Collectively, these 37 occupations accounted for 36 percent of total employment in 1984, and this proportion is expected to increase to 39 percent by 1995.

Implications for Napa Valley College

1. The college should pursue its plan to develop programs in hotel and restaurant management and in culinary arts. These programs will enable the college to prepare students for careers in the following three areas: (1) food preparation workers, excluding fast food (1,205,000 jobs in 1995); (2) cooks in restaurants (601,000 jobs in 1995); and (3) food service and lodging managers (746,000 jobs in 1995).

2. The college should explore the feasibility of offering courses in automotive and motorcycle mechanics as part of its Electronics and Machine Tool Technology Programs. In 1984 there were 922,000 automotive mechanics. The number of people employed as automotive mechanics is projected to increase by 185,000 or 20 percent from 1984 to 1995. The demand for auto mechanics in the Bay Area is very good, especially those specializing in electrical systems, computerized controls, fuel injection, and emission systems.

Journey-level mechanics made from $7 to $16 an hour (California Economic Development Department, 1985). Auto mechanics need a sound understanding of electronics and repair of micro-electronics components. They also will need a basic understanding of automated manufacturing processes used to assemble the bodies and engines of automobiles. The college's excellent programs in Electronics Technology and Machine Tool Technology could provide a sound basis upon which an automotive repair curriculum could be built.

3. As with the rest of the nation, the Bay Area is comprised of numerous retail stores, many of which are part of a national or regional chain. In 1984 there were about 971,000 retail store managers. By 1995, the number of people employed as managers of retail stores is expected to increase by 291,000 or 30 percent. Consideration should be given to incorporating a program in retail store management into the Management and Supervision curriculum.

Table 1

Occupations with the largest job growth, 1984-95[1]

(Numbers in thousands)

Occupation	Employment		Change in employment 1984-95	
	1984	1995	Number	Percent
Cashiers	1,902	2,469	556	29.8
•Registered nurses	1,377	1,829	452	32.8
Janitors and cleaners, including maid and housekeeping cleaners	2,940	3,383	443	15.1
Truck drivers	2,484	2,911	428	17.2
Waiters and waitresses	1,625	2,049	424	26.1
Wholesale trade salesworkers	1,248	1,617	369	29.6
Nursing aides, orderlies, and attendants	1,204	1,552	348	28.9
Salespersons, retail	2,732	3,075	343	12.6
•Accountants and auditors	882	1,189	307	34.8
Teachers, kindergarten and elementary	1,381	1,662	281	20.3
•Secretaries	2,797	3,064	268	9.6
•Computer programmers	341	586	245	71.7
•General office clerks	2,398	2,629	231	9.6
Food preparation workers, excluding fast food	987	1,205	219	22.1
Food preparation and service workers, fast food	1,201	1,417	215	17.9
•Computer systems analysts, electronic data processing	308	520	212	68.7
•Electrical and electronics engineers	390	597	206	52.8
•Electrical and electronics technicians and technologists	404	607	202	50.0
•Guards	733	921	188	25.6
Automotive and motorcycle mechanics	922	1,107	185	20.1
Lawyers	490	665	174	35.5
•Cosmetologists and related workers	524	674	150	28.7
Cooks, restaurant	463	601	138	29.7
Maintenance repairers, general utility	878	1,015	137	15.6
•Bookkeeping accounting and auditing clerks	1,973	2,091	118	6.0
Bartenders	400	512	112	27.9
Computer operators, excluding peripheral equipment	241	353	111	46.1
Physicians and surgeons	476	585	109	23.0
•Licensed practical nurses	602	708	106	17.6
Carpenters	944	1,046	101	10.7
Switchboard operators	347	447	100	28.7
Food service and lodging managers	657	746	89	13.6
Electricians	545	633	88	16.2
Teacher aides and educational assistants	479	566	88	18.3
Blue-collar worker supervisors	1,470	1,555	85	5.8
Receptionists and information clerks	458	542	83	18.2
•Mechanical engineers	237	317	81	34.0

[1]Note: •denotes areas in which Napa Valley College offers programs or courses directly related to the occupation.

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FASTEST GROWING OCCUPATIONS

The 20 fastest growing occupations from 1984 to 1995 are listed in Table 2. It is important to note that some of the occupations appearing in Table 2 are increasing rapidly from relatively small employment levels and, therefore, are not found on the list of occupations that will add the most new jobs. Thirteen of the twenty fastest-growing occupations are in the fields of computers, electronics, engineering, and health.

Implications for Napa Valley College

Napa Valley College presently offers programs and courses designed to prepare students for careers in eight of the twenty fastest-growing occupations. Three of the projected fastest-growing occupations from 1984 to 1995 in which the college should consider offering programs are paralegal personnel (up 51,000 jobs or 97.5%), securities and financial service salesworkers (up 39% or 32,000 jobs), and engineering technicians (up 37 percent or 20,000 jobs).

Only a handful of colleges in the Bay Area offer certificate and associate degree programs in paralegal and legal assistant training. They include American River College (Sacramento), City College of San Francisco, and St. Mary's (Moraga). The staff secretary in counseling reports that she receives a number of inquiries from potential students about the availability of a legal assisting program at Napa Valley College. At their March 27, 1986, meeting the Napa Valley College Administration of Justice Advisory Committee recommended that the college look into developing a paralegal program. Given the interest expressed in this area, the college should conduct a survey of law firms in Napa, Solano, Sonoma, and Contra Costa Counties to determine if there is a need for a legal assisting program.

The college currently offers a transfer program in engineering but not an occupational program designed to prepare students for careers as engineering technicans. The college has much of the equipment needed to offer such a program (e.g., CAD/CAM workstations, computer-integrated manufacturing tools, electronics training equipment).

Table 2

Fastest growing occupations, 1984-95[1]

(Numbers in thousands)

Occupation	Employment		Change in employment 1984-95	
	1984	1995	Number	Percent
Paralegal personnel	53	104	51	97.5
•Computer programmers	341	586	245	71.7
Computer systems analysts, electronic data processing (EDP)	308	520	212	68.7
Medical assistants	128	207	79	62.0
•Data processing equipment repairers	50	78	28	56.2
•Electrical and electronics engineers	390	597	206	52.8
•Electrical and electronics technicians and technologists	404	607	202	50.7
Computer operators, except peripheral equipment	241	353	111	46.1
Peripheral EDP equipment operators	70	102	32	45.0
Travel agents	72	103	32	43.9
Physical therapists	58	83	25	42.2
Physician assistants	25	35	10	40.3
Securities and financial services salesworkers	81	113	32	39.1
Mechanical engineering technicians and technologists	55	75	20	36.6
Lawyers	490	665	174	35.5
•Correction officers and jailers	130	175	45	34.9
•Accountants and auditors	882	1,189	307	34.8
•Mechanical engineers	237	317	81	34.0
•Registered nurses	1,377	1,829	452	32.8
Employment interviewers, private or public employment service	72	95	23	31.7

[1]Note: •denotes areas in which Napa Valley College offers programs or courses directly related to the occupation.

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TWENTY FASTEST DECLINING OCCUPATIONS

The 20 occupations that are expected to experience the most rapid decline in employment from 1984 to 1995 are listed in Table 3. Technological advances and/or increased foreign competition are responsible for the dramatic loss in jobs that is predicted to occur in these occupations.

None of the occupational educations programs offered at Napa Valley College will be affected by the decline in jobs expected to take place in these 20 job categories. However, the projected decline of 10.6 percent in the number of college and university faculty jobs that may take place over the next decade or so will have a major influence on those associated with post-secondary education. Recent reports indicate that there will be a high demand for college and university faculty beginning in 1995. Factors accounting for this expected turn-around include the large percentage of existing faculty that are likely to retire in the next decade, the coming of college age of the baby boomers' children who now are swelling the rolls of the elementary schools, and a decline in the number of students preparing for careers as college and university professors.

Table 3

Fastest declining occupations, 1984-95

(Numbers in thousands)

Occupation	Employment		Percent decline in employment
	1984	1995	
Stenographers	239	143	-40.3
Shoe sewing machine operators and tenders	33	22	-31.5
Railroad brake, signal, and switch operators	48	35	-26.4
Rail car repairers	27	21	-22.3
Furnace, kiln, or kettle operators and tenders	63	50	-20.9
Shoe and leather workers and repairers, precision	43	35	-18.6
Private household workers	993	811	-18.3
Station installers and repairers, telephone	111	92	-17.4
Sewing machine operators, garment	676	563	-16.7
Textile machine operators, tenders, setters, and set-up operators, winding	279	235	-15.7
Machinery maitenance mechanics, textile machines	26	22	-14.8
Statistical clerks	93	81	-12.7
Industrial truck and tractor operators	389	342	-11.9
Central office operators	77	68	-11.5
Farm workers	1,079	958	-11.2
College and university faculty	731	654	-10.6
Farm and home management advisers	27	24	-9.6
Extruding and drawing machine setters and set-up operators, metal and plastic	28	25	-9.1
Pressing machine operators and tenders, textile, garment and related	116	106	-8.8
Postal service clerks	317	290	-8.5

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Implications for Napa Valley College

Napa Valley College doesn't offer training programs in any of the 20 fastest-declining occupational areas. However, stenography or shorthand is a major component in the Secretarial Science Program. In light of the 40 percent decrease in jobs for stenographers over the next decade, the secretarial science program staff should re-examine the importance of the shorthand requirement vis-a-vis other skill areas (e.g., transcription) which are not part of the curriculum.

PROJECTED CHANGES IN EMPLOYMENT FOR COLLEGE-EDUCATED WORKERS BY OCCUPATION, 1984-1995

The information presented in Table 4 shows the projected change in the number of jobs that will be available from 1984 to 1995 for each of 82 occupations which typically have prerequisites of one or more years of college. Napa Valley College offers occupational and transfer programs that are directly related to seven of the twelve occupational areas that are projected to grow by 50 percent or more in the number of jobs available by 1995.

Table 4

Projected Change in Employment for College-Educated Workers,

by Occupation: 1984-1995

Much Faster Than Average[a]	Faster Than Average[b]	Average[c]	More Slowly Than Average[d]	Little Change[e]
•Computer programmers	Accountants & Auditors	Automotive Body Repair	Agriculture Scientists	Air Traffic Controllers
•Computer Service Technicians	Actuaries	Broadcast Technicians	Aircraft Mechanics	Clergy
•Computer Systems Analysts	Architects	Chiropractors	Bookkeepers & Accounting Clerks	Drafters (without computer-aided design skills)
•Electrical & Electronic Technicians	Bank Officers & Managers	Chemists	Counselors	
Electrical Engineers	Biological Scientists	Commerical and Graphic Artists & Designers	Foresters & Conservationists	
Health Services Administrators	Chemical Engineers	Cosmetologists	Librarians	
Legal Assistants	Civil Engineers	Diesel Mechanics	Photographers	
•Mechanical Engineers	Clinical Laboratory Technologists	Dentists	Secondary School Teachers	
Occupational Therapists	Dancers	Economists	School Administrators	
Podiatrists	Dental Assistants	Geologists & Geophysicists	Urban and Regional Planners	
Physical Therapists	Dental Hygenists	Hotel Managers		
•Machine Tool Programmers	Designers	Mathematicians		
	Dietitians	Mining Engineers		
	Drafters (with computer-aided design)	Musicians		
	Electrocardiograph Technicians	Optometrists		
	Electroenchephalograph Technicians	Personnel & Labor Relations		
	Health Record Technicians	Physician Assistants		
	Industrial Engineers	Public Relations Specialist		
	Kindergarten & Elementary Teachers	Radio & TV Announcers		
	Lawyers	Recreation Workers		
	L.V.N.s	Reporters & Correspondents		
	Medical Assistants	Respiratory Therapists		
	Nuclear Engineers	Secretaries		
	Physicians	Singers		
	Physicists	Social Workers		
	Psychologists	Sociologists		
	Radiological Technologists	Speech Pathologists & Audiologists		
	Registered Nurses			
	Surgical Technicians			
	Surveyors			

[a]Employment is projected to increase 50% or more.
[b]Employment is projected to increase 30% to 49%.
[c]Employment is projected to increase 20% to 29%.
[d]Employment is projected to increase 6% to 19%.
[e]Employment is projected to increase or decrease by 5%.

•Denotes areas in which Napa Valley College offers programs or courses directly related to the occupation.

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MAJOR TRENDS IN THE LABOR FORCE THAT MAY AFFECT NAPA VALLEY COLLEGE

There are several major trends taking place in the labor force that are likely to have some bearing on the programs and services offered by Napa Valley College. These changes in the labor force and the implications of these changes for the college are summarized below.

Increase in the Importance of College Degrees in the Labor Force

Between 1983 and 1984, the number of college graduates 25 to 64 years of age in the labor force rose by one million. Increases of this magnitude have occurred in each of the past three years. The number of adult workers who are college graduates has risen from 14 percent in 1970 to 25 percent in 1984.

Recent U. S. Bureau of Labor Statistics reports reveal that college graduates continue to register higher rates of labor market participation, markedly lower unemployment rates, greater expected lifetime earnings, and larger shares of managerial and professional specialty jobs, and they are affected less by recessions than other educational status groups. These data continue to confirm that educational attainment is one of the most important determinants of occupational attainment.

Implications for Napa Valley College. The increase in the importance of college degrees in the labor force may affect Napa Valley College in the following ways:

1. The faculty and staff should continuously inform current and prospective students of the importance of having a college education with respect to occupational attainment, personal development, and contributions to society;

2. This trend toward increased levels of educational attainment among members of the work force may result in a rise in the proportion of recent high school graduates and persons in an out of the labor market who will enroll in a college degree or certificate program. The college staff will have to work hard to attract these students to attend Napa Valley College rather than other colleges, universities, or trade schools.

Increased Participation Rates of Women in the Work Force

Participation in the labor market among women ages 25 to 44 is expected to continue its dramatic increase from 50 percent in 1970, to 70 percent in 1984, and to over 80 percent by 1995. Factors that account for this steady increase in the number of women in the work force include changes in marital status (i.e., divorce), increased levels of educational attainment, declining fertility rates, and rising career expectations.

Implications for Napa Valley College. The increased participation rates of women in the work force may affect Napa Valley College in the following ways:

1. There will be an increase in the number of women who enroll in the college's occupational education programs. This increase may be most pronounced in the area of business, computer studies, drafting, electronics technology, and telecommunications. College staff in occupational and technical areas should make a special effort to attract women into their programs, particularly in areas that have been traditionally dominated by men. Procedures for attracting and addressing the needs of women students should be incorporated into the curriculum of the college's technical and occupational programs. Women entering careers in fields previously dominated by men may encounter some discrimination related to their sex. The Career and Re-entry Program staff should work with faculty in the occupational and technical areas on incorporating strategies into their courses which will help students recognize and effectively overcome barriers related to sexual discrimination.

2. There will be a steady rise in the demand for on-campus child care. The Child Care Center on campus has had a waiting list of 50 to 60 children for the past few years. The college should continue its efforts to gain state funding to build a new child care facility.

3. There will be an increase in the number of women in the work force interested in training for new occupations or acquiring skills needed to advance in their present jobs. The college should expand its efforts in designing programs that are responsive to the time constraints of these working adults. The Career and Re-entry Center has established programs and services to help returning students accommodate the requirements of college with other demands on their time.

   Many adults find it difficult to begin and/or complete programs offered by the college due to time constraints associated with a traditional 18-week semester-length course format. The college should attempt to make it easier for adults with multiple demands on their time to attend college by offering more courses in such flexible formats as open-entry/open-exist, concentrated courses in the day program (3 hours one day a week instead of one hour on each of three days a week), more Saturday courses, and more short courses.

Decline in Labor Market Participation Rates Among Persons Ages 55 or Over

Participation in the labor force among persons 55 years of age and over is expected to be only 25 percent in 1995, down from 30 percent in 1984 and 39 percent in 1970. This steady decline in the labor market participation rates among persons in this age group reflects the increasing percentage of workers who are eligible for pensions and who opt to take an early retirement.

Implications for Napa Valley College. The decline in labor market participation rates among persons ages 55 and over may affect Napa Valley College in the following ways:

1. Just under 30 percent of the adult population (18 and older) of Napa County are 60 years of age and older. This figure, which is higher than the average for California, is expected to increase through the 1990s.

2. The college should continue to support and monitor the kinds of credit, non-credit and community service programs that are needed by retired persons in Napa. In the 1985 Fall Semester, 891 students representing 46 percent of the enrollment in non-credit courses were 55 years of age or older. About 6.5 percent of those enrolled in credit classes in Fall semester 1985 were 55 years of age or older.

3. The college should look into offering programs that are focused on pre- and post-retirement planning.

Increases in Employment of Electronics and Engineering Technical Personnel

High technology industry growth and the increasing use of high technology products in the economy as a whole will lead to the increasing employment of scientific and technical personnel. Engineers are projected to increase 36 percent during the 1984-1995 period, adding 480,000 jobs. Much of this sharp rise will be found among electrical and electronic engineers (up 206,000 jobs) engaged in developing computers, communications equipment, and defense-related electronic equipment.

Engineering technicians and electronics technicians are projected to grow 28 percent in the next ten years, adding 371,000 jobs. The demand for technicians mirrors the employment trends in industries where high technology equipment is used. Three emerging fields in which the demand for electronics and engineering technicians is expected to grow very rapidly are fiber optics, telecommunications (including voice-data, microwave, and satellite communications), and robotics.

Implications for Napa Valley College. The increases in employment of electronics and engineering technical personnel may affect Napa Valley College in the following ways:

1. The Electronics Program should continue to expand its communications curriculum to reflect the technological advances taking place in the areas of fiber optics, voice-data communications, microwave communications, and satellite communications. Uses of these technologies range from reducing the cost of long-distance calls to creating telephone-computer networks, to establishing systems of communications with devices in space. A grant application requesting funds to purchase equipment needed for this program is being submitted in spring 1986.

2. In order to respond to the rising need for well-trained engineering technicians, the college should look into the feasibility of creating a new occupational progam in engineering technology. The program could be developed in conjunction with the college's programs in engineering (transfer), electronics technology, and machine tool technology.

3. Efforts should be made to encourage students to consider preparing for careers in one of the rapidly-growing fields within the engineering and electronics-related occupations. One way of achieving this objective is to pair the Survey of Modern Electronics Course with courses in Career Exploration and/or Math Without Fear. Under this arrangement, students would be exposed to the basic concepts and skills needed to succeed in engineering and electronics in the electronics course, and they would receive assistance in math needed to solve problems in their electronics class in the Math Without Fear course. The Career Exploration course would introduce students to the career options available in engineering and electronics.

   A second approach to encouraging more students to consider careers in engineering and/or electronics is to articulate the college's engineering and electronics curricula with the course work provided in the high schools. The college is close to implementing a "2 + 2" program in electronics technology with the high schools in Napa County. Under this arrangement, students can complete a year's requirements for the college's electronics technology program while they are in high school. This will enable those students to take more advanced level courses in electronics and additional courses in general education in their two-year course of study at Napa Valley College.

Increases in Employment in the Health-Related Occupations

Occupations in the health care field, including medical professionals, technicians, and service workers, are projected to increase by 26 percent and add 1.4 million jobs by 1995. This faster-than-average rate of growth, however, will not be uniform across industries and occupations related to the delivery of health care.

Cost-containment pressures, technological advances that allow sophisticated care to be provided on an outpatient basis, and consumer demand for community-based and home health care will result in a slower-than-average rate of growth in hospital employment and a faster-than-average growth in nursing homes, doctors' offices, and outpatient care facilities such as urgent care centers and "surgicenters."

Surgical technicians are projected to grow as fast as the average employment growth for all occupations, and job opportunities for medical and clinical laboratory technologists are projected to grow more slowly than average. The number of physicians' assistants, however, is expected to grow much faster than the economy's projected average growth as hospitals, health maintenance organizations, and large multi-specialty physicians' offices employ more of them to help contain costs. The number of medical records technologists and technicians is also expected to grow much faster than average, owing to the great importance of the medical records department to hospitals in monitoring and reducing costs. Medical assistants are also projected to grow much faster than average from 1984 to 1995.

The next largest group, nursing aides, orderlies, and attendants, is projected to increase by 29 percent and 348,000 new jobs, followed by licensed

vocational nurses up 18 percent and 106,000 new jobs by 1995. The dominant factor contributing to job growth for both nurses aides and licensed practical nurses is the aging of the population. Care of the aged is expected to continue to shift away from hospitals to nursing homes and home health care. By 1995, nursing homes, with a projected rate of growth of 44 percent should move ahead of hospitals as the primary employer of both nurses aides and licensed practical nurses. Smaller health occupational groups that are projected to grow rapidly during the 1984-1995 period include physical therapists, occupational therapists, dental hygienists, dental assistants, and dietitians.

Implications for Napa Valley College. The changes in employment for the health-related occupations professions may affect Napa Valley College in the following ways:

1. The college should look into the feasibility of having the Health Occupations Division add programs to prepare students for jobs as medical records technicians and medical assistants. Each of these fields is expected to grow by more than 25 percent by 1995.

2. The Health Occupations Division should continue to emphasize the care of the aged in its registered nursing and licensed vocational nursing programs. Changes in accreditation standards reflect the increased emphasis on the care of the aged.

3. The demand for nursing aides, orderlies, and attendants in Napa and surrounding Bay Area counties will continue to be great as the number of nursing homes in this region increase. The minimum wages paid to people holding these jobs has caused the college to shy away from offering training programs for nurses aides. Nevertheless, the college should work closely with nursing homes and other out-patient providers on upgrading the training, responsibilities, and compensation of nurses aides, attendants, and orderlies.

4. Changes taking place in the nursing profession may result in the merging of the LVN and ADV curriculums within the next five years. A goal of the American Nurses Association is to require a baccalaureate degree as the minimum educational preparation for entry into the practice of registered nursing. Attainment of this goal would require legislative and/or administrative law changes in each of the 50 states. Since this proposed change to increase the entry-level degree requirements is opposed by associate degree nursing programs throughout the country, it may not occur in the near future. Nevertheless, the college should continue to monitor closely these proposed changes in entry-level requirements for registered nurses and the effects these changes may have on the curriculum.

5. In an effort to cut costs, health providers are asking nurses to assume tasks formerly performed by other health technicians. The Health Occupations Division staff should continue to monitor the changing responsibilities of nurses, and these changes should be reflected in the curriculum. Several faculty members in the Health Occupations Division are applying for in-service training grants to learn more about the technologies that graduates of their programs will be

expected to be familiar with in their work settings. The knowledge they acquire from this training will be incorporated into the curriculum.

Office Clerical Workers

Office clerical workers are projected to add nearly two million jobs from 1984 to 1995 and remain the largest major occupational group with 20.5 million workers. Although this occupational group is expected to grow more slowly than average between 1984 and 1995, the number of new jobs created is large because of the large employment base in 1984. Significant numbers of new jobs in the future are expected to be added in several clerical fields, including secretaries (268,000 jobs); general office clerks (231,000 jobs); bookkeeping, accounting, and auditing clerks (118,000 jobs); and receptionists and information clerks (83,000 jobs).

Other office clerical occupations that are expected to be more severly affected by office automation and other types of technological changes that will result in little or no job growth include typists, file clerks, and reservation and transportation ticket agents. Office clerical occupations expected to decline in employment between 1984 and 1995 include stenographers (down 40 percent), statistical clerks (down 13 percent), and payroll and timekeeping clerks (down 5 percent).

Several clerical occupations are projected to increase significantly, despite technological changes, because they are concentrated in industries that are expected to increase in employment. Among these occupations are insurance adjustment clerks (up 21 percent), bill and account collectors (up 25 percent), insurance adjusters and investigators (up 24 percent), court clerks (up 23 percent), and credit checkers (up 26 percent).

Implications for Napa Valley College. The changes in employment for the office clerical workers professions may affect Napa Valley College in the following ways:

1. The Business and Computer Studies Division should urge students in all of the college's programs to become proficient with personal computers and popular software programs used in business. The ability to use personal computers will become increasingly important as more and more professionals and managers are encouraged to use desktop personal computers and executive workstations to do some of the work previously delegrated to support staff.

2. The college should consider offering an option in insurance and financial services as part of its Secretarial Science Program to respond to the rapid growth in new office and clerical positions that are expected to occur in these industries (e.g., insurance adjustment clerks, bill and account collectors, insurance ajusters and investigators, and credit checkers).

Hotel and Restaurant Industries

The restaurant industry will continue to expand because more people are eating out, the population continues to grow, incomes are increasing, and more women are working. Within the eating and drinking industry, a slowing in the growth of employment in fast-food establishments and an increase in standard restaurants is expected. Among the occupations in this group projected to add large numbers of new jobs are waiters and waitresses (up 32 percent or 424,000 jobs); food preparation workers, excluding those employed in fast-food restaurants (up 28 percent or 219,000 jobs); restaurant cooks (up 36 percent or 138,000 jobs); and institutional or cafeteria cooks (up 22 percent or 73,000 jobs). The number of food service and lodging managers is expected in increase by 121,000 or 18 percent from 1984 to 1995.

Implications for Napa Valley College. The changes in employment for the hotel and restaurant industries professions may affect Napa Valley College in the following ways:

1. The college should continue its plan to establish first-rate programs in culinary arts and in hotel and restaurant management.

Protective Service Occupations

The number of police officers and detectives and workers in fire-fighting occupations is projected to increase as fast as the average for all occupations, adding 66,000 (up 13 percent) and 48,000 (up 16 percent) new jobs from 1984 to 1995. Correction officers and jailers (up 35 percent or 45,000 jobs) and guards (up 26 percent or 188,000 jobs) are expected to increase at a faster rate than average.

Implications for Napa Valley College. The changes in employment for the protective service occupations professions may affect Napa Valley College in the following ways:

1. The college should continue to offer its certification and in-service programs to prepare students for jobs as corrections officers and/or guards. Napa Valley College is one of the few community colleges in California that is certified by the State Board of Corrections to offer a Certificate of Vocational Competency in Corrections.

Computer Occupations

The applications for computers have expanded dramatically over the last two decades, and it appears that they will continue to do so through the mid-1990s. The number of computer systems analysts is projected to grow 69 percent from 1984 to 1995, adding more than 212,000 jobs. This occupation will benefit from the rise in new computer applications. Computer programmers are expected to increase 72 percent by 1995, or by 245,000 jobs over this period. The mounting number of new computer applications

and the need to modify existing systems should bring about rapid employment growth for computer programmers, despite the increasing efficiency of programming methods.

The number of data processing equipment repairers is projected to increase by 56 percent, adding 28,000 jobs by 1995. Although computers have become increasingly modular in construction, leading to greater ease of repair, the number of computers is expected to increase rapidly enough to require the services of numerous data processing equipment repairers.

Implications for Napa Valley College. The changes in employment for the computer occupations professions may affect Napa Valley College in the following ways:

1. The college should continue to expand its computer studies program, expecially in the areas of systems analysis and in programming.

2. Efforts should be made to encourage students to consider preparing for one of the rapidly growing fields within the computer-related occupations. One way of achieving this objective is to pair the Introduction to Computer Systems Course with courses in Math Without Fear and/or Career Exploration. Under this arrangement, students would be exposed to the basic concepts and skills needed to succeed in computer fields in their Introduction to Computer Systems course, and they would receive assistance with the math and problem-solving skills needed to succeed in computer classes in their Math Without Fear course. Students would be introduced to career opportunities in computer-related occupations in the Career Exploration class.

   Another approach to encouraging more students to consider careers in a computer occupation is to articulate the college's Computer Studies curriculum with the course work provided in the high schools. Faculty in the Business and Computer Studies Division are in the process of working with the high schools to develop an integrated curriculum in computer studies.

Machine Tool and Welding Occupations

The number of jobs for machine setters, set-up operators, and tenders is projected to increase by only four percent because of the introduction of computer numerically controlled machine tools which require less specialized set-up procedures and because of increasing automation in most manufacturing industries. However, this slow growth should still yield 196,000 more jobs from 1984 to 1995 (5,553,000 to 5,748,000 jobs) on account of the large size of this group of occupations.

The employment prospects will be bright for individuals who are skilled in programming and operating computer numerically controlled machine tools. The number of jobs available for numerical control machine tool operators (metal and plastic) will increase by 30 percent from 1984 to 1995, and the number of persons employed as combination machine tool setters and operators will rise by 27 percent.

The number of jobs available for welders (up 22 percent) and metal fabricators (up 20 percent) is expected to increase by at least 20 percent from 1984 to 1995. Instruction in each of these areas is taught in the college's Welding Technology Program.

Implications for Napa Valley College. The change in employment for machine tool and welding occupations professions may affect Napa Valley College in the following ways:

1. In an effort to cut costs, many manufacturing companies, such as Kaiser Steel, are requiring that their employees be conversant in both welding and in fabrication. Heretofore, there were two job classifications, one for welders, the other for fabricators. This move to one job classification means that many employees will return to the college to take courses in either welding or fabrication.

2. In light of the trend toward integrated manufacturing processes, the college should continue its efforts to revise its machine tool curriculum to incorporate the new computer numerical control equipment and to establish interdisciplinary courses involving drafting, machine tool technology, and welding.

Education-Related Occupations

Kindergarten and elementary schoolteachers are projected to increase 20 percent and add 381,000 new jobs, while schoolteachers in the secondary schools are expected to grow more slowly than average (five percent), adding 48,000 jobs.

The number of faculty employed in colleges and universities is projected to decline from 731,000 in 1984 to 654,000 in 1995, a loss of 77,000 jobs or 11 percent of the profession. The primary reason for the drop is the expected decline in college enrollments through 1995. However, the demand for college faculty is expected to rise dramatically beginning in 1995 due to retirements of existing faculty and increased college enrollments.

Implications for Napa Valley College. The changes in employment for the education-related occupations professions may affect Napa Valley College in the following ways:

1. The need for teachers in kindergarten through grade six has and will continue to result in an increase in student interest in obtaining a multiple subject credential. These aspiring teachers will need to complete courses in the liberal arts as part of their credential program. The college should examine its curriculum to decide what, if any, changes should be made to attract and to accommodate the growing number of students who will be interested in preparing for careers as school teachers. The college should explore the feasibility of restoring the pre-education or education major program.

Scientific Occupations

The number of persons employed as biological scientists are expected to increase by 17 percent between 1984 and 1995, as they continue to develop drugs, food products, and chemicals. The number of physical scientists (chemists, geologists, geophysicists, oceanographers) is projected to rise 13 percent, or slower than average, reflecting the relatively mature industries in which they are concentrated. Mathematical scientists should increase by 23 percent, which is faster than the average for all occupations, mainly as a result of increased statistical work and mathematical modeling.

An emerging field that is likely to result in a substantial increase in demand for scientists is biotechnology. Breakthroughs in cloning and gene splicing have spurred a dramatic increase in the number of people employed in biotechnology. In 1985, there were at least 20,000 jobs in plant biotechnology alone. Agriculture provides the most jobs in biotechnology, especially for biologists who know plants.

With respect to educational background, about 30 percent of those employed in biotechnology have doctorates, 55 percent are research associates with master's or bachelor's degrees, and the remaining 15 percent of the employees in biotechnology are technicians with as few as two years of college. A thorough background in science is the main criteria for entry into this field.

Implications for Napa Valley College. The changes in employment for the scientific occupations professions may affect Napa Valley College in the following ways:

1. Students should be informed of the present and emerging career opportunities available to individuals with a strong background in mathematics and science. Trends in the employment of technicians in such emerging fields as biotechnology should be monitored with respect to the knowledge presented in the science curriculum.

GROWING USE OF TECHNOLOGY IN THE WORKPLACE

Although high technology occupations are growing rapidly, they will only account for 11 percent of the 16 million new jobs that are expected to be created in the next ten years, and they will employ just over six percent of the 123 million people projected to be in the work force in 1995. However, as noted in a recent issue of U. S. News and World Report, (December, 1985), such statistics underestimate the widespread use of technology in the workplace as both manufacturing and service industries--from auto and textile makers, to retailers, to banks and insurance companies--invest in computers and electronics to cut costs and improve efficiency.

Implications for Napa Valley College

1. The pervasive use of computers and electronics in the workplace, as well as in the home, makes it important for students to understand high technology products they are likely to encounter. In

addition to increasing their appreciation of the environment, this knowledge will put students in a better position to evaluate the merits of computer- and electronics-based products than if they had to rely totally on information provided by someone else.

The college should consider offering an introductory survey course on understanding technology in modern society. Such a course would introduce students to the major concepts upon which various technological devices (e.g., computers, microwave ovens, telecommunications equipment, photocopying machines) are based, and how such concepts are applied in products found in business, industry, and the home.

Availability of Additional Information on Employment Trends

This report highlighted the trends in employment for many of the occupational areas which the college prepares students to enter. Trends in employment from 1984 to 1995 for each of 500 occupations are available upon request. Information on employment opportunities in the Bay Area for several occupational areas are also available upon request.

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